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cont

wherein the composition is effective for treating vascular insufficiency or limb ischemia secondary to arterial occlusive disease when administered intravenously, intraarterially, or via infusion, and the active agent in said composition comprises HGF;
a second container comprising a pharmaceutically-acceptable buffer; and
instructions for using the HGF to treat vascular insufficiency or limb ischemia secondary to arterial occlusive disease.

REMARKS

Claims 8-15 are pending in this application. The present claims are directed to an article of manufacture (Claims 8-9), a kit (Claim 10), and a pharmaceutical composition (Claims 11-15), all of which comprise HGF as an active agent.

Rejection under 35 U.S.C. §102(b)/103(a)

Claims 8-12 have been rejected under 35 U.S.C. §102(b) as being anticipated by Rosen et al., Zarnegar et al., Grant et al., or Bussolino et al.. Additionally, Claims 8-13 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Rosen et al., Zarnegar et al., Grant et al., or Bussolino et al. in view of Godowski et al.. Applicants respectfully traverse this rejection in view of the following remarks.

In the Office Action at page 3, the Examiner asserts that the cited references suggest that HGF has an angiogenic effect. Although the experiments set forth in Rosen, Grant, and Bussolino show some kind of vascular formation in or around the implanted plugs or pellet, there is no conclusion drawn in these references that HGF is solely responsible for the data obtained. In particular, Rosen et al. state that their studies suggest a possible role for SF (i.e. HGF) as a

paracrine mediator of pathologic angiogenesis in human inflammatory disease. (See page 232). Grant et al. state that their findings “do not rule out the possibility that inflammatory cells contribute to the angiogenic response.” They also state that “it is not known if SF (i.e. HGF) recruits monocytes or modulates monocyte function. These considerations suggest that the angiogenic activity of SF may be multifactorial.” (See pages 1940-1941). Bussolino et al. state that “we cannot exclude that the angiogenic activity of HGF involves other circuits mediated by epithelial cells activated by this cytokine. (See page 639, second column). Zarnegar et al. state that “[b]ased on these findings, it would be tempting to assume a role for HGF-SF in angiogenesis and vascular repair (emphasis added)”. Based on the disclosures of Rosen, Grant, Bussolino, and Zarnegar, one of ordinary skill in the art would have been skeptical as to the role HGF plays in angiogenesis, if any.

In addition, Applicants respectfully submit that statements made by different individuals describing the angiogenic factor of HGF or VEGF at different times and under different circumstances and/or experimental conditions cannot be compared to each other. What one individual may describe as “a potent angiogenic factor” may be considered and described by someone else as merely “an angiogenic factor”. In order for such statements to be given any weight or consideration, they must come from the same individual with the same base of reference for each comparison made (e.g., same experimental conditions). Rosen and Grant describe experiments in which SF (HGF) and control matrigels which did not contain SF were compared. In Bussolino, a vinyl pellet containing HGF was implanted into a corneal pocket and compared to an implanted vinyl pellet lacking HGF and to bFGF, a well-known angiogenic factor. These experiments cannot be compared to the present invention because the experiments were conducted at different times under different experimental conditions. Accordingly, the

experiments set forth in Rosen, Grant, and Bussolino are not commensurate in scope with the experiments set forth in the present invention.

Even assuming, *arguendo*, that the cited references teach that HGF is angiogenic, the references do not teach or suggest the claims as amended. In particular, the references do not teach or suggest an article of manufacture, a kit, or a composition in which the active ingredient, HGF, is effective for treating vascular insufficiency or limb ischemia secondary to arterial occlusive disease when administered intravenously, intraarterially, or via infusion. Grant et al., and Rosen et al. disclose angiogenesis experiments in which HGF was located in implanted Matrigel plugs. Bussolino et al. disclose angiogenesis experiments in which HGF was located in implanted copolymer pellets. In each of the experiments of Grant et al., Rosen et al., and Bussolino et al., HGF was released slowly over a period of time in a limited area. Therefore, one of ordinary skill in the art would conclude from these experiments that in order to promote the growth of blood vessels, the tissue must be slowly exposed to HGF over a period of time. Thus, Grant et al., Rosen et al., and Bussolino et al. actually teach away from the injection or infusion of HGF as claimed in the present invention.

Further, there is no demonstration or suggestion in any of Grant et al., Rosen et al., or Bussolino et al. that HGF is capable of being injected or that HGF could be administered any other way except by the disclosed sustained release method. Injection or infusion of HGF is completely the opposite of a sustained release of HGF. Accordingly, one of ordinary skill in the art would not have been motivated to inject or infuse HGF because there is no teaching or suggestion in the cited references that HGF could be administered in a different manner.

The motivation for injecting or infusing HGF must stem from some teaching, suggestion, or inference in the prior art (See, e.g., Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F2d 1044, 5

USPQ2d 1434 (Fed. Cir. 1988)). In each of the experiments of Grant et al., Rosen et al., and Bussolino et al., HGF was released slowly over a period of time in a limited area. Thus, the references teach, or at least suggest, that angiogenesis occurs when HGF is administered by a sustained release method. These references give no indication or suggestion that HGF could be administered in a different manner when it is used as an angiogenic factor. Therefore, one of ordinary skill in the art would conclude from the experiments set forth in Grant et al., Rosen et al., and Bussolino et al. that in order to promote the growth of blood vessels using HGF, the tissue must be slowly exposed to HGF over a period of time. Accordingly, there is no motivation in any of these references to inject or infuse HGF when it is being used as an angiogenic factor. Thus, one of ordinary skill in the art reading the disclosures of these references would not have arrived at the presently claimed invention.

In addition, Applicants submit that the present invention is not obvious because it provides unexpectedly superior results. In the Example set forth on pages 10-13 of the specification, the effects of rhuHGF on angiogenesis in a rabbit model of hind limb ischemia was compared to the effects of VEGF on angiogenesis in a rabbit model of hind limb ischemia. These rabbit models were designed to stimulate ischemia characteristics of patients with severe lower extremely arterial occlusive disease.

TABLE 1

Day 30 Data	Vehicle	rhuVEGF	rhuHGF
Angiographic Score	0.46 ± 0.06	0.62 ± 0.04 †	0.78 ± 0.07 † §
Capillary Density (/mm ²)	158 ± 12	247 ± 18 †	282 ± 15 † §
BP index (%)	51.6 ± 4.5	69.8 ± 3.1 †	84.5 ± 1.8 † §
Blood flow (ml/min)	17.9 ± 1.1	20.6 ± 1.3*	23.4 ± 1.2 † §
Muscle perfusion (rest, %)	73.2 ± 6.8	88.4 ± 6.6*	99.2 ± 4.5 † §
Muscle perfusion (stress, %)	36.6 ± 8.8	65.7 ± 7.5 †	83.3 ± 6.7 † §
Muscle weight (%)	73.0 ± 2.6	87.6 ± 2.8*	95.9 ± 5.4 † §

% = % of normal limb; * = p<.05 vs vehicle; † = p<.001 vs vehicle; § = p<.05 vs VEGF

As is clearly shown in Table 1 set forth above and on page 12 of the specification, HGF enhanced collateral vessel formation and region perfusion and prevented atrophy.

For example, in rabbits injected with rhuHGF, a blood flow of 23.4 ± 1.2 ml/min and a capillary density of 282 ± 15 was observed. On the other hand, rabbits injected with rhuVEGF, a blood flow of only 20.6 ± 1.3 ml/min and a capillary density of merely 247 ± 18 was observed. Also, rabbits with rhuHGF had a muscle perfusion (stress %) of 83.3 ± 6.7 whereas rabbits with rhuVEGF had a muscle perfusion (stress, %) of only 65.7 ± 7.5. Additionally, rabbits injected with rhuHGF retained 95.9 ± 5.4% of the muscle weight but rabbits injected with rhuVEGF only retained 87.6 ± 2.8% of their muscle weight. Further, Applicants submit that at similar doses in the study, HGF exhibited greater efficiency than VEGF. Applicants submit that these are

unexpectedly superior results and that the present invention is not obvious for this additional reason.

In view of the above, Applicants submit that the present invention is not anticipated by, or obvious over, Rosen et al., Zarnegar et al., Grant et al., or Bussolino et al. alone or combined with Godowski et al. Accordingly, Applicants respectfully request that these rejections be reconsidered and withdrawn.

CONCLUSION

In light of the above, Applicants believe that this application is now in condition for allowance and therefore request favorable consideration.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

PIPER RUDNICK MARBURY & WOLFE, LLP

2-25-02

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MARKED-UP COPY OF AMENDED CLAIMS

8. (Twice Amended) An article of manufacture, comprising:

a container; and

a composition comprising an active agent contained within said container;

wherein the composition is effective for treating vascular insufficiency or limb ischemia secondary to arterial occlusive disease when administered intravenously, intraarterially, or via infusion, and the active agent in said composition comprises HGF.

10. (Twice Amended) A kit, comprising:

a first container, and a composition comprising an active agent contained within said container;

wherein the composition is effective for treating vascular insufficiency or limb ischemia secondary to arterial occlusive disease when administered intravenously, intraarterially, or via infusion, and the active agent in said composition comprises HGF;

a second container comprising a pharmaceutically-acceptable buffer; and

instructions for using the HGF to treat vascular insufficiency or limb ischemia secondary to arterial occlusive disease.

FULL TEXT OF CASES (USPQ2D)

All Other Cases

Uniroyal Inc. v. Rudkin-Wiley Corp. (CA FC) 5 USPQ2d 1434 (1/13/1988)

Uniroyal Inc. v. Rudkin-Wiley Corp. (CA FC) 5 USPQ2d 1434

,Uniroyal, Inc. v. Rudkin-Wiley Corp.**U.S. Court of Appeals Federal Circuit
5 USPQ2d 1434****Decided January 13, 1988****No. 86-1300****Headnotes****PATENTS****1. Patentability/validity -- Obviousness -- Evidence of _
(§ 115.0903)**

Federal district court, in holding that it would have been obvious to combine disclosures of prior art references to achieve claimed invention, improperly relied on hindsight and misapplied obviousness standard, since there is no suggestion of such combination in any individual prior art reference or in prior art taken as whole, since structure created by such combination would in any event fall short of pertinent claims of patent in suit, since court improperly relied upon fact that prior art and patent utilize same aerodynamic principles in dismissing differences between invention and prior art as "superficial," and since court erred in comparing specification figures, rather than claims, to prior art in determining patentability.

2. Patentability/validity -- Obviousness -- Secondary considerations (§ 115.0907)

Dramatic increase in sales of patented airflow deflecting device to trucking industry as means of reducing fuel costs during "oil crisis" of early 1970's, and wind-tunnel studies of tractor-trailers in 1953 which did not produce invention of practical aerodynamic aid for such trucks, are strong secondary evidence of non-obviousness of air-deflecting device for reducing wind resistance encountered by

tractor-trailers, since they show both prior failure and long felt need, and such evidence should have been taken into consideration in resolving obviousness issue.

3. Infringement -- Literal infringement (§ 120.05)

Patent construction -- Claims -- Broad or narrow (§ 125.1303)

Federal district court erred in holding that patent claims were not literally infringed, since court improperly read limitations of narrow claims into broader claims of patent, since court did not acknowledge that accused device, which matches claim limitations as to shape and position, would literally infringe patent if it also satisfied claim limitations as to height and location, and since evidence shows that court erred in determining that accused device does not function in same manner as patented invention.

4. Infringement -- Doctrine of equivalents -- In general (§ 120.0701)

Infringement -- Tests of infringement (§ 120.09)

Fact that accused infringer does not rely on height and position limitations in patent claims for installation of accused device does not demonstrate absence of infringement under doctrine of equivalents unless evidence also shows that accused device does not function in same manner as patented device, and addition of features to accused device does not result in non-infringement if all claim limitations or their equivalents are present in such device.

Particular Patents -- General and Mechanical -- Wind Resistors

3,241,876, Saunders, apparatus for reducing linear and lateral wind resistance in tractor-trailer combination vehicles, holding of invalidity reversed, holding of non-infringement reversed in part, affirmed in part, and vacated in part.

Case History and Disposition:

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Appeal from the U.S. District Court for the District of Connecticut, Burns, J.

Action by ►Uniroyal◄ Inc. and Premix Inc. against Rudkin-Wiley Corp. seeking declaratory judgment of patent invalidity or non-infringement. From judgment for plaintiffs, defendant appeals. Reversed in

http://iplaw.bna.com/cgi-bin/om_isapi.dll/ip_uspq2d.nfo/?showhidden=yes&clientID=1961361 2/25/02

part, affirmed in part, vacated in part, and remanded.

Related decision: 210 USPQ 337.

Attorneys:

Francis T. Carr, of Kenyon & Kenyon (Robert D. Fier, Albert J. Breneisen, and John D. Vandenberg, of Kenyon & Kenyon, with him on brief), New York, N.Y., for appellant Rudkin-Wiley Corp.

William R. Murphy, of Tyler Cooper & Alcorn, New Haven, Conn., and Thomas A. Beck, of Felfe & Lynch, New York, N.Y., for appellees ►Uniroyal◄ Inc. and Premix Inc.

Judge:

Before Davis, Newman, and Archer, Circuit Judges.

Opinion Text

Opinion By:

Archer, Circuit Judge.

Rudkin-Wiley Corporation (Rudkin-Wiley) appeals the judgment by the United States District Court for the District of Connecticut holding U.S. Patent 3,241,876 ('876 patent or Saunders' patent) invalid for obviousness under 35 U.S.C. §103 (1982 and Supp. III 1986) or, if valid, not infringed by ►Uniroyal◄, Inc. or its successor in interest, Premix, Inc. (collectively, ►Uniroyal◄). We affirm-in-part, vacate-in-part, reverse-in-part and remand.

BACKGROUND

This case was initiated by ►Uniroyal◄ in 1975 by the filing of a declaratory judgment action to have the '876 patent declared invalid or, if valid, not infringed by ►Uniroyal◄. Premix filed a similar action immediately after its purchase of ►Uniroyal's◄ deflector business in 1980. Rudkin-Wiley counterclaimed for infringement. The cases were consolidated and proceedings were stayed pending an appeal of a separate action involving the '876 patent. *See Saunders v. Air-Flo Co.*, 646 F.2d 1201, 210 USPQ 337 (7th Cir. 1981) (holding that none of the claims

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of the '876 patent were proved invalid). 1 Following a bench trial, judgment was rendered in the present case in March, 1986 in favor of ►Uniroyal◄, on the basis that the '876 patent is invalid under section 103 or, if valid, was not infringed by the ►Uniroyal◄ device.

The '876 patent, issued March 11, 1966 to Walter Selden Saunders (Saunders), relates to an air-deflecting device for reducing wind resistance encountered by tractor-trailer combination vehicles. 2 Rudkin-Wiley obtained an exclusive license under the '876 patent from Saunders in 1966. The claimed device is a panel-like deflector 3 mounted on top of the cab of the tractor, which according to the patent specification "produces a relatively wide diffusion of the air . . . and causes the same to readhere to the body of the truck [sic, trailer] rearwardly of the front portion thereof in a relatively smooth and even manner. . . ." Rudkin-Wiley's commercial embodiment of the Saunders invention is roughly rectangular and has a smaller cross-sectional area than the cross-sectional area of the front face of the trailer that extends above the tractor cab. When the vehicle is in motion, the effective surface area encountering

wind resistance is thus decreased and significant fuel savings are achieved because of the reduced resistance or drag.

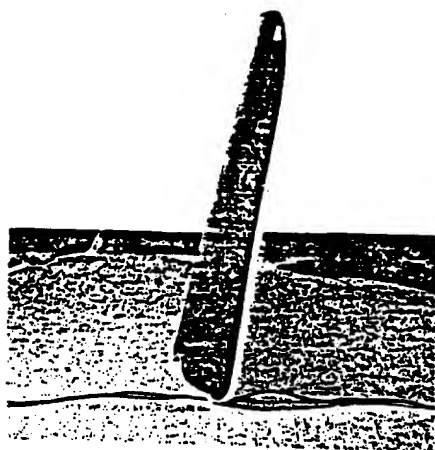
Independent claim 2 of the '876 patent reads as follows: 4

Claim 2. In combination with a tractor-trailer vehicle having a gap between the tractor and the trailer, an air flow deflecting shield comprising

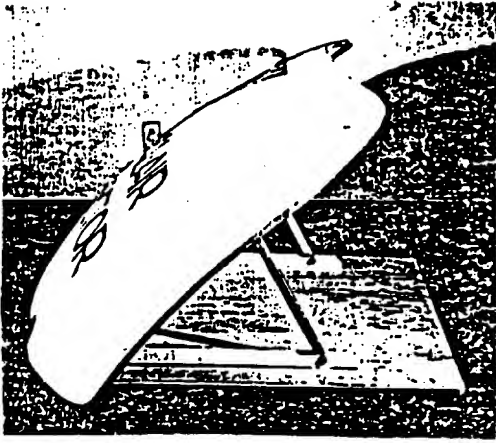
- (a) a baffle mounted to extend above the tractor cab roof,
- (b) said baffle being vertically inclined rearwardly and forwardly convexed in a horizontal plane,
- (c) said baffle having a predetermined height substantially 0.7 of the difference in height between said cab roof and the trailer roof,
- (d) said baffle being positioned a distance from the front of the trailer equal to approximately 0.7 the half width of the trailer.

The accused device of ►Uniroyal◄ is similar to Rudkin-Wiley's embodiment of Saunders' invention, although it is more rounded on the corners and edges. ►Uniroyal◄ asserts that its device more closely resembles a fairing and relies to a greater extent on a streamlined, continuous flow around the front surface of the trailer in contrast to the emphasis in the '876 patent on abruptly diverting the airflow about the trailer face.

Rudkin-Wiley's commercial embodiment of the Saunders invention and the ►Uniroyal◄ device are depicted below:



Rudkin-Wiley

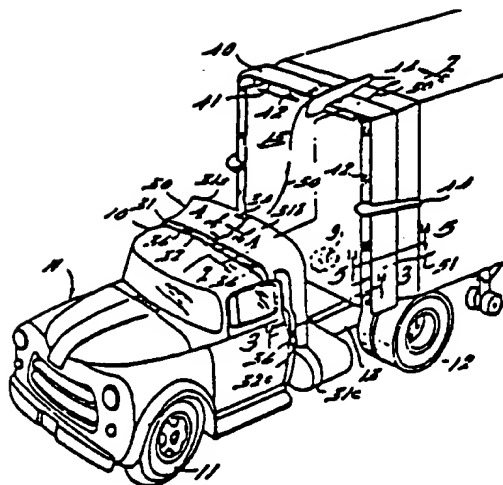


Uniroyal

PRIOR ART

Beginning in 1953 the University of Maryland conducted an extensive study of the wind resistance of tractor-trailer vehicles to seek methods of reducing drag (Maryland study). This study was sponsored by Trail-mobile, Inc., a trailer manufacturer, and the American Trucking Association Foundation, Inc. Under the direction of a professor of aerodynamics, the University's Wind Tunnel Operations Department tested over 7,000 configurations in wind tunnel tests on trailer models. None of the configurations tested was similar to the invention defined by the claims of the Saunders patent. The study concluded that one of the best drag reduction methods was to use a continuous "fairing." This is a deflector attached to the back of the tractor cab roof which extends in a curved or modified "S" configuration to the top leading edge of the trailer where it is also attached (the Maryland fairing). While the Maryland fairing proved in wind tunnel tests to be very effective at reducing the drag from wind resistance, it was recognized to be impractical, if not useless, because the tractor-trailer could not be turned when such a fairing was employed.

The Stamm patent, U.S. Patent No. 2,863,695 issued on December 9, 1958, discloses an attempt to make a practical device which would produce streamlining effects similar to those of the Maryland fairing. The Stamm device, depicted below, consists of two principal parts, one being curved pieces mounted on the top and sides of the tractor cab and the other being conduits mounted on the top and sides of the trailer. The curved pieces are designed to direct air flow smoothly from the cab through the conduits on the trailer. The district court noted that there is "no evidence that the [invention of the] Stamm patent was ever commercially reproduced."



Stamm Device

Austrian Patent No. 62,329, issued November 15, 1913 to Constantin, was before the district court but it was not considered by the United States Patent and Trademark Office (PTO) examiner in the prosecution of the '876 patent. Constantin discloses "for vehicles with large carrying capacities" the mounting ahead of the vehicle of a shield having a smaller cross-section than the vehicle. It states:

If one attaches at a suitable distance ahead of the vehicle a shield of suitably shaped cross-section that is smaller than that of the front of the car, the layers of the medium that are deflected by this screen will remove out of the path of the car also other layers that, without the shield, would have struck the vehicle and provided resistance to the motion.

As in the case of Stamm, we have not been directed to, or found in the record, any evidence of commercialization of the Constantin device."

Two patents for bug deflector shields for automobile windshields -- Davisson, U.S. Patent No. 2,236,846, and Gracey, U.S. Patent No. 2,148,798 -- were deemed by the district court to be pertinent to "illustrate a means by which a deflecting shield may be placed," although the court noted there was insufficient evidence to show that these bug-deflecting shields reduced drag.

Several articles and textbooks (see footnote 5, *infra*) discussing the aerodynamics of airflow resistance were also cited by the district court. One general aerodynamic principle described in these publications is "shielding" (also referred to as "favorable

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interference"), i.e., the use of a smaller cross-sectional deflector in front of a larger surface, which effects a reduction of drag.

OPINION

A. Validity

A patent is presumed valid and the burden of establishing invalidity rests on the party asserting such invalidity. 35 U.S.C. §282 (1982). This presumption may be rebutted only by clear and convincing

evidence. *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1360, 220 USPQ 763, 771 (Fed. Cir.), *cert. denied*, 406 U.S. 821, 224 USPQ 520 (1984). The burden of proof is not reduced when prior art is presented to the court which was not considered by the PTO. *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1549, 220 USPQ 193, 199 (Fed. Cir. 1983). However, reliance upon such art when that art is more pertinent than the art considered by the PTO may facilitate meeting the burden of proving invalidity. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

Obviousness under 35 U.S.C. §103 is a legal conclusion involving a preliminary determination of four factual inquiries: (1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any, of nonobviousness. Secondary considerations include objective indicia of nonobviousness such as commercial success, long-felt but unsolved need, and failure of others. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966); *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1566-1568, 1 USPQ2d 1593, 1596-1597 (Fed. Cir.), *cert. denied*, 107 S.Ct. 2187 (1987).

The factual findings of the district court underlying the obviousness determination will be overturned on appeal only if they are clearly erroneous. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d at 1566, 1 USPQ2d at 1596. The ultimate conclusion on obviousness, however, is a legal conclusion and is reviewed as such. *Polaroid Corp. v. Eastman Kodak Co.*, 789 F.2d 1556, 1558, 229 USPQ 561, 562 (Fed. Cir.), *cert. denied*, 107 S.Ct. 178 (1986).

The obviousness standard, while easy to expound, is sometimes difficult to apply. It requires the decisionmaker to return to the time the invention was made. "The invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time. . . . That which may be made clear and thus 'obvious' to a court, with the invention fully diagrammed and aided . . ." by experts in the field, "may have been a breakthrough of substantial dimension when first unveiled." *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138, 227 USPQ 543, 547-548 (Fed. Cir. 1985).

In this case we are convinced that the district court misapplied the obviousness standard. It has impermissibly used hindsight to reconstruct the claimed invention from prior art with the invention before it and aided by ▶Uniroyal's◀ expert, rather than viewing the invention from the position of a person of ordinary skill at the time it was made. The court also erroneously analyzed and weighed secondary considerations of nonobviousness.

(1) Hindsight

"When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself." *Interconnect Planning Corp.* 774 F.2d at 1143, 227 USPQ at 551. *See also Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), *cert. denied*, 475 U.S. 1017 (1986). Something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Lindemann Maschinenfabrik GmbH v. American Hoist and Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984).

[1] Each of the claims at issue defines an airflow deflecting shield or baffle for use on a tractor-trailer vehicle. The shield or baffle is defined in claims 1 and 2 as vertically inclined "rearwardly and forwardly convexed in a horizontal plane" and in claim 3 as an "upstanding air flow deflecting baffle." There is no suggestion in any individual prior art reference of such a combination of location and configuration nor is it suggested by the prior art as a whole. *Interconnect Planning Corp.*, 774 F.2d at 1143, 227 USPQ at 551; *see also W.L. Gore & Assocs.*, 721 F.2d at 1551, 220 USPQ at 312 (it is impermissible to use the claims as a frame and the prior art references as a mosaic to piece together a

facsimile of the claimed invention).

The Maryland fairing is a smooth contoured surface, attached to the cab roof of the tractor and to the roof of the trailer, which covers the "entire gap between the tractor and trailer." Obviously it is structurally quite different and does not approach

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the rearwardly inclined, horizontally convexed configuration of the claimed invention.

The Stamm device mounts air flow control attachments, or U-shaped conduits, on the top and sides of the rear portion of the tractor cab and conduits on the top and sides of the forward portion of the trailer. These air flow control attachments again are not structurally similar to the claimed invention, nor is there any suggestion of the claimed shape or structure in the Stamm patent. The district court stated that "Stamm essentially is an alternative to using a device that is contiguously connected to the tractor and trailer," i.e., the Maryland fairing.

The district court admitted that the Constantin shield lacked many of the characteristics of the Saunders invention. The court said:

The Constantin patent shows that a *flat-plated shield* if placed in front of a larger bluff body, will deflect the air stream away from the front of the bluff body thereby reducing the air resistance. Admittedly, the Constantin patent lacks the sophistication of design that attends most contemporary patents. *It is not concerned with tractor-trailers nor does it reveal information regarding the deflector that is present in the '876 patent: the size, positioning and placement of the deflector*. In fact, it seemingly teaches that the deflector must be placed directly in front of the vehicle; a position ▶Uniroyal◀ interprets as meaning the front of the car radiator. (Emphasis added.)

As indicated, the Constantin patent did not disclose a convex shape or a rearward inclination, as specifically claimed in the '876 patent.

The district court did not conclude that any one of these references would have made the invention of the '876 patent obvious, but it found that it would have been obvious to combine the disclosures of such references to achieve the claimed structure. It said "the combination of teachings . . . would have suggested the possibility of achieving further improvement . . . along the line of the '876 patent." The court reasoned that an engineer "upon viewing the University of Maryland studies, would have discarded the viability of streamlining the actual body of a tractor-trailer," that "an add-on streamlining device, such as a fairing, . . . would be much more effective," that such a "device was impractical," that the "Stamm patent would have revealed . . . add-on streamlining devices," that "large cumbersome, U-shaped frames [of Stamm] for both the trailer and tractor might well have inspired an inventor to seek a simpler way to reduce air drag," and that "Constantin and the aerodynamic literature would have provided the ideal alternative to reduce drag."

With respect to Constantin, the court said: [i]t and the other literature [referring to the scientific articles and textbooks] disclose that a simple blunt-edged deflector placed in front of a large bluff body can reduce drag. The court finds persuasive Dr. Widnall's testimony that the Constantin patent and the "favorable interference" data, combined with the Stamm and the bug deflector patents, would have suggested to an engineer with knowledge of aerodynamic principles the design of a wind-deflecting baffle that could easily be mounted on top of a trailer cab. Together, the references would have suggested the desirability of combining Constantin's theory with Stamm's practical application suggestions.

Although the district court concludes that the combination of these references would suggest the claimed invention, it does not show that there is any teaching or suggestion in any of the references, or in the prior art as a whole, that would lead one with ordinary skill in the art to make the combination. *Interconnect Planning Corp.*, 774 F.2d at 1143, 227 USPQ at 551. The district court makes the combination solely on the basis of its own analysis, aided by Uniroyal's expert.

Constantin apparently places a baffle in front of the vehicle so as to direct the air flow around the entire vehicle. There is no reason to combine Constantin with the Maryland study and/or Stamm. The Constantin reference is based on the wind resistance principle that a "shield, if placed in front of a large bluff body, will deflect the airstream away from the front of the bluff body thereby reducing the air resistance." Both the Maryland study and Stamm are based on the principle of streamlining, the antithesis of Constantin. In view of the antithetical principles of operation and the absence of any teaching or suggestion to combine these prior art devices, there is no apparent basis for the district court's conclusion that it would have been obvious to one skilled in the art to make the combination. See *In re Sernaker*, 702 F.2d 989, 994, 217 USPQ 1, 5 (Fed. Cir. 1983).

Even if the district court were correct in combining Constantin with Stamm and the Maryland study, the structure created would, in any event, fall short of the invention defined by claims 1 and 2. They require a deflector mounted to extend above the tractor roof, which is inclined in a rearward direction and convex. The structure that might be achieved by the district court's

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combination would not be so shaped and positioned.

The court considered any differences between the claimed invention and the prior art to be "superficial," primarily because Constantin and the scientific publications 5 teach the "very same [aerodynamic] principle" as utilized in the '876 patent. The mere fact that a device or process utilizes a known scientific principle does not alone make that device or process obvious. *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d at 1462, 221 USPQ at 489.

Finally, the district court in its validity discussion has erred in other respects. It appears to have applied the often rejected obvious-to-try standard when it says that after combining Constantin, the Maryland study and Stamm, it would be a matter of "experimentation in order to extract the exact parameters [for the height and positioning] that would make the device work." See, e.g., *American Hospital Supply Corp. v. Travenol Laboratories, Inc.*, 745 F.2d 1, 7, 223 USPQ 577, 582 (Fed. Cir. 1984). At the same time, the court states "even an expert would be unable to predict the result an aerodynamic device would have on a tractor-trailer vehicle." This suggests nonobviousness, not routine experimentation.

We also note that the district court relied on similarities between "the U-shaped shells of Stamm which are attached across the top of the cab and extend downward along and connect to the sides of the tractor" and the Saunders configurations depicted in Figures 16 and 17 of the patent. In the specification, Figures 16 and 17 are described as diverting the "flow of air around the sides of the truck" and providing a shield "along each edge of the cab extending downwardly." However, these limitations do not appear in the claims as finally allowed. This court has repeatedly held that it is the claims which define the invention. *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 861, 870, 228 USPQ 90, 95 (Fed. Cir. 1985). The district court therefore erred in comparing these specification figures with the prior art to determine the patentability of the invention.

(2) Secondary Considerations

Objective evidence of nonobviousness "must always when present be considered en route to a

determination of obviousness" because:

evidence of secondary considerations may often be the most probative and cogent evidence in the record. It may often establish that an invention appearing to have been obvious in light of the prior art was not. It is to be considered as part of all the evidence, not just when the decisionmaker remains in doubt after reviewing the art.

Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1538-39, 218 USPQ 871, 879 (Fed. Cir. 1983). With respect to Rudkin-Wiley's objective evidence of nonobviousness, the district court said that:

fter acquiring exclusive rights to the '876 patent from Mr. Saunders in 1966, Rudkin-Wiley launched an intensive multi-media promotional campaign using advertising, publicity, personal appearances by Mr. Wiley before the trucking industry, and vigorous sales efforts. No real evidence of the trucking industry's receptiveness to the air deflector manifested for seven years. And then, in 1973, demand for a gas-saving device increased to stave off the effects of the then current oil crises. As such, there is not evidence of long-felt need.

[2] In the district court's view, Rudkin-Wiley's dramatic increase in sales beginning in 1973 was related more to the oil-crisis-induced demand than to any inherent desirability of Saunders' device. Even though demand increased after the oil crisis, the court overlooked the fact that it was the claimed invention to which the industry turned, and it was the uniqueness of the claimed invention which made this so. *See Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1383, 231 USPQ 81, 93 (Fed. Cir. 1986), *cert. denied*, 107 S. Ct. 1606 (1987). As the court found, "it is undeniable that Rudkin-Wiley spawned a multi-million dollar industry with the introduction of a wind-reducing device for tractor-trailer vehicles."

The court also did not take into account other objective evidence of long felt need and failure of others. The Maryland study, by itself, is strong evidence of both. The fact that such an extensive study was performed in 1953 shows a significant interest in drag reduction techniques long before fuel con

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sumption became a critical concern. In addition, the record does not contain any indication that in the approximately ten years between the Maryland study and Saunders' invention any solution to the air resistance problem of tractor-trailers was forthcoming, particularly a solution of such effectiveness, and of such ease of use and manufacture, as the claimed invention.

The district court did not consider the failure of the Maryland study to produce an effective solution to the wind resistance problem as an indication of long felt need. Instead, it viewed that failure as an indication that a later invention, based on a different principle, would have been obvious, because the inventor would know from such failure that he should try some other approach. Under this reasoning, it would be progressively more difficult, after a succession of failures, to secure a patent or an invention that provided a solution to a long felt need. This is contrary to the well established principle that the failure of others to provide a feasible solution to a long standing problem is probative of nonobviousness. *In re Piasecki*, 745 F.2d 1468, 1473-75, 223 USPQ 785, 790 (Fed. Cir. 1984).

In sum, we are convinced that the secondary evidence as a whole strongly suggests the nonobviousness of the claimed invention.

Having carefully reviewed the record, we conclude that the district court impermissibly used a hindsight analysis in determining that the claimed invention would have been obvious and did not properly analyze and consider secondary indicia of nonobviousness. Accordingly, that portion of the judgment

holding that the '876 patent is invalid is reversed.

B. Infringement

(1) Literal Infringement

Literal infringement requires that every limitation of the patent claim must be found in the accused device. *Mannesmann Demag Corp. v. Engineered Metal Products Co.*, 793 F.2d 1279, 1282, 230 USPQ 45, 46 (Fed. Cir. 1986). The party alleging infringement, in this case Rudkin-Wiley, has the burden of proving infringement by a preponderance of the evidence. *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1361, 219 USPQ 473, 480 (Fed. Cir. 1983). "Analysis of patent infringement involves two inquiries: determination of the scope of the claims . . . followed by determination of whether properly interpreted claims encompass the accused structure." *Mannesmann Demag Corp. v. Engineered Metal Products Co.*, 793 F.2d at 1282, 230 USPQ at 46.

"Claim construction is reviewed as a matter of law. *Fromson v. Advance Offset Plate, Inc.*, 720 F.2d 1565, 1569, 219 USPQ 1137, 1140 (Fed. Cir. 1983). However, interpretation of a claim may depend on evidentiary material about which there is a factual dispute, requiring resolution of factual issues as a basis for interpretation of the claim. See *Moeller v. Ionetics, Inc.*, 794 F.2d 653, 656, 229 USPQ 992, 995 (Fed. Cir. 1986); *Palumbo v. Don-Joy Co.*, 762 F.2d 969, 974, 226 USPQ 5, 8 (Fed. Cir. 1985)." *H.H. Robertson Co. v. United Steel Deck Inc.*, 820 F.2d 384, 389, 2 USPQ2d 1926, 1929 (Fed. Cir. 1987). The question of literal infringement (do the claims read on the accused device) is determined as a factual inquiry and is reviewed on a clearly erroneous standard. *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d at 866, 228 USPQ at 93.

(a) Claim 2

[3] It is established in patent law that "[w]here some claims are broad and others narrow, the narrow claim limitations cannot be read into the broad whether to avoid invalidity or to escape infringement." *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1574, 225 USPQ 236, 239 (quoting *Deere & Co. v. Int'l Harvester Co.*, 658 F.2d 1137, 1141, 211 USPQ 11, 16 (7th Cir.), cert. denied, 454 U.S. 969 (1981)). The district court erred as a matter of law in not following this well recognized principle when it interpreted claim 2.

In determining the absence of literal infringement, the court construed claims 1 and 2 together and read them as if they both contained the same limitations. It held that claims 1 and 2 required an "airflow deflecting baffle" which worked by "diverting the airflow relatively widely" and which created a "low pressure air eddy" in the gap between the cab and the trailer. It found the ►Uniroyal◄ device did not literally infringe because it more resembled a fairing than a shield or baffle in that it "emphasizes smooth contours and attached flow." The recitations of diverting airflow relatively widely and creating a low pressure air eddy, however, are found only in claim 1 and not in claim 2.

►Uniroyal◄ contends that the district court's statement that the ►Uniroyal◄ device works much more like a fairing should be taken as a finding of no literal infringement because the specification makes clear that Saunders meant to cover only baffle-type deflectors and not fairing-type deflectors. However, this argument is not persuasive because claim 2 contains no limitation concerning "working more like a shield [or baffle] than a fairing," and it is the language of the properly interpreted claims which determines infringement. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760 770-71,

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218 USPQ 781, 788 (Fed. Cir. 1983, cert. denied, 465 U.S. 1026, 224 USPQ 520 (1984).

►Uniroyal's device is undeniably "a baffle mounted to extend above the tractor cab roof" and "vertically inclined rearwardly and forwardly convexed in a horizontal plane." Therefore, these limitations of claim 2 (*see* paragraphs (a) and (b) of claim 2, *supra* at page 3) are met by ►Uniroyal's device. Moreover, these limitations do not exclude deflectors also convexed vertically in the manner of ►Uniroyal's deflector. With respect to the height limitation of paragraph (c) and the position limitation of paragraph (d), the district court declined to consider them, stating:

The fact that optimal placement of the '876 baffle may coincide in some instances with optimal placement of the ►Uniroyal device does not demonstrate that the ►Uniroyal device infringes upon the '876 formulae. The '876 claims cannot be viewed as claiming specific locations for an air deflector, but rather as formulae for determining optimal height and location of the deflector.

This was error on the part of the district court. Since limitations (a) and (b) are satisfied, if the height and position of the ►Uniroyal devices are within limitations (c) and (d), the claims are infringed and this is the end of the inquiry. It was apparently established 6 that the ►Uniroyal devices, at least in some instances, fall within the scope of these limitations. We note that the height and position limitation in the claim are modified by the terms "substantially" and "approximately." These terms must be interpreted in light of the specification and prosecution history to determine the literal coverage of the claims with respect to height and position. That part of the judgment holding that claim 2 is not literally infringed is, therefore, reversed. The extent of literal infringement must be ascertained on remand by determining the accused devices that meet the height and positioning parameters of claim 2. *See supra* , note 6.

(b) Claim 1

The district court found that claim 1 of the '876 patent is not infringed because the ►Uniroyal device does not function in the manner required by the claim, i.e., by "diverting the air flow relatively widely" and by creating a "low pressure air eddy" in the "gap between the tractor and the trailer."

The court explained its finding that the ►Uniroyal device does not divert the air flow relatively widely as follows:

The inventor of the ►Uniroyal deflector . . . designed his . . . device as a continuously curved shape that would direct the airflow with a minimum of separation directly to the desired parts of reattachment. . . . Unlike the '876 patent the . . . [►Uniroyal] device emphasizes smooth contours and attached flow. . . . The . . . [►Uniroyal] device thus operates on an aerodynamic principle more similar to a fairing than a deflecting baffle. Therefore, there is no literal infringement of the claim regarding a baffle that diverts the airflow widely.

Terms of a claim must be interpreted with regard to the other claims, the specification and the prosecution history. *Fromson* , 720 F.2d at 1569-71, 219 USPQ at 1140-41; *Loctite Corp.* , 781 F.2d at 866, 228 USPQ at 93. The specification of the '876 patent explains that "rather than streamlining the vehicle body . . . the device of the instant invention produces a relatively wide diffusion of the air impacting the forward portion of the trailer, and causes the same to readhere to the body of the truck rearwardly of the front portion thereof in a relatively smooth and even manner. . . ." Thus, "diverting the airflow relatively widely" means diverting the airflow so that it does not impinge upon the front of the trailer. Although the district court emphasized that the ►Uniroyal device was more "streamlined and acted much like a fairing" to allow the air flow to leave the trailing edge of the device smoothly, it also determined that the direc

tion of the air flow was changed "so as to flow onto the leading edges of the trailer." The ►Uniroyal◄ device therefore diverts the airflow relatively widely in the manner that the properly construed claim requires.

The district court was erroneous in finding the ►Uniroyal◄ device did not create a low pressure air eddy in the "gap" in ►Uniroyal◄ as required by claim 1. The record shows that Dr. Widnall, who was a witness for ►Uniroyal◄, testified that "there was an eddy behind the deflector" but that she "did not take any pressure measurements." Her opinion was that "the pressure behind that deflector would be lower than atmospheric." The question then is whether "gap" as used in the claim includes the area behind the deflector above the roof of the tractor cab. The illustrations and descriptions in the specification indicate that the air eddy and gap can be above the cab roof. In the light of the specification, the district court unduly restricted the scope of the claim in construing "gap" to mean only the space from the rear of the tractor cab to the front of the trailer.

Accordingly, claim 1 is literally infringed. That part of the judgment holding that claim 1 is not literally infringed is, therefore, reversed and the case is remanded to determine the extent of literal infringement of claim 1. *See supra*, note 6.

(b) Claims 3 and 4

The district court found that claim 3 and dependent claim 4 are not infringed because the ►Uniroyal◄ device does not have a lower edge in a substantially air impervious relationship with the cab roof as required by claim 3. There was extensive evidence regarding the configuration and operation of the ►Uniroyal◄ device and the construction of claims 3 and 4, including the testimony of experts on both sides. We are not persuaded that the district court's findings with respect to literal infringement of these claims are clearly erroneous. *Loctite Corp.*, 781 F.2d at 866, 228 USPQ at 93. Nor can we say that the court's construction of these claims was wrong as a matter of law. *Fromson*, 720 F.2d at 1569, 219 USPQ at 1140.

Accordingly, we affirm that part of the district court's judgment holding that claims 3 and 4 were not literally infringed.

(2) Infringement under the Doctrine of Equivalents

The district court properly recognized that when literal infringement is not found the equitable doctrine of equivalents may come into play. Thus, if there are ►Uniroyal◄ devices that do not literally infringe, infringement under the doctrine of equivalents must be considered. Under the three pronged analysis from *Graver Tank & Mfg. Co. v. Linde Air products Co.* 339 U.S. 605, 608-09, 85 USPQ 328, 330 (1950), infringement under the doctrine depends on whether the accused device performs substantially the same function, in substantially the same way to achieve the same result.

Rudkin-Wiley urges this court to hold that the patented invention is infringed under the doctrine of equivalents as a matter of law. This we decline to do. Whether a device is equivalent to a claimed invention is a factual inquiry. *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 961, 220 USPQ 592, 600 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 835, 225 USPQ 232 (1984). Because the district court did not consider infringement under the doctrine of equivalents in the light of properly construed claims and because of errors made by the district court in applying the doctrine of equivalents, this issue must be remanded for factual determinations.

In the doctrine of equivalents section of its opinion, the court discussed the height and distance parameters of the claims and stated that:

Even if the installation of ►Uniroyal's◄ device results in literally duplicating the distance and height requirements of the '876 patent, there is no infringement *because* ►Uniroyal◄ *does not rely on those specific parameters to mount its deflector* The ►Uniroyal◄ deflector, therefore, does not infringe upon the dimensional or positioning claims in the '876 patent. (Emphasis added.)

[4] If the installation of ►Uniroyal's◄ device duplicates the distance and height parameters of the claims of the '876 patent, assuming the other claim limitations are also met, there would, contrary to the court's conclusion, be literal infringement. Whether or not ►Uniroyal◄ has relied on the parameters in the claims is irrelevant if its device in fact falls within those limitations. Similarly, in a doctrine of equivalents analysis, if it is established that ►Uniroyal◄ does not rely on the claimed height and positioning parameters, that does not, standing alone, demonstrate absence of infringement. Only if this fact shows that ►Uniroyal's◄ device does not perform *in substantially the same manner* would it be probative of no infringement under the doctrine and the court should make this determination on remand. As noted, the other two aspects of the doctrine (function and result) were satisfied.

Finally, the district court erred in finding ►Uniroyal's◄ improvement over the claimed invention to be a distinguishing feature. The district court said "the device differed from the '876 patent in that it was designed to be

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an adjustable deflector" and concluded that this was another reason it was noninfringing under the doctrine of equivalents. Adding features to an accused device will not result in noninfringement if all the limitations in the claims, or equivalents thereof, are present in the accused device. *Amstar Corp. v. Envirotech Corp.*, 730 F.2d 1476, 1482, 221 USPQ 649, 653 (Fed. Cir.), *cert. denied*, 469 U.S. 924, 224 USPQ 616 (1984) ("[M]odification by mere addition of elements or functions . . . cannot negate infringement").

CONCLUSION

The portion of the judgment holding the '876 patent to be invalid under section 103 for obviousness is reversed. The portion of the judgment that claims 1 and 2 of the '876 patent are not literally infringed is reversed and that claims 3 and 4 are not literally infringed is affirmed. The portion of the judgment that the claims are not infringed under the doctrine of equivalents is vacated. The case is remanded to the district court for further proceedings consistent with this opinion.

AFFIRMED-IN-PART, REVERSED-IN-PART, VACATED-IN-PART AND REMANDED

Appendix

APPENDIX

1. In combination with a tractor-trailer vehicle having a gap between the tractor and the trailer, said tractor being of less height than said trailer, an airflow deflecting baffle mounted to extend above the cab roof of said tractor for diverting the air flow relatively widely in a manner to avoid entry of the air stream into said gap thereby creating at least one low pressure air eddy in said gap to reduce the frontal air pressure against the trailer, said diverted air reattaching to the trailer at points spaced rearwardly of said gap, said baffle being inclined vertically rearwardly and forwardly convexed in a horizontal plane, positioned a distance from the front of the trailer equal to approximately 0.7 the half width of the trailer end of a height substantially 0.7 of the difference in height between the tractor cab roof and the roof of the trailer.

2. In combination with a tractor-trailer vehicle having a gap between the tractor and the trailer, an air flow deflecting shield comprising a baffle mounted to extend above the tractor cab roof, said baffle being vertically inclined rearwardly and forwardly convexed in a horizontal plane, said baffle having a predetermined height substantially 0.7 of the difference in height between said cab roof and the trailer roof, said baffle being positioned a distance from the front of the trailer equal to approximately 0.7 the half width of the trailer.
3. In combination with a tractor-trailer vehicle having a gap between the tractor and the trailer, said tractor having a cab with the roof thereof of less height than said trailer, a substantially solid upstanding air flow deflecting baffle mounted to extend above the cab roof and having its lower edge in substantially air impervious relation therewith, for diverting the substantially entire air flow relatively widely in a manner to avoid entry of the air stream into the gap, thereby creating at least one low pressure air eddy in said gap to reduce the frontal air pressure against the trailer, the diverted air reattaching to the trailer at points spaced rearwardly of said gap, said baffle being of a height between 0.5 and 0.9 of the difference in height between the tractor cab roof and the roof of the trailer, and being positioned a distance from the front of the trailer equal to between 0.3 and 2.0 times the half width of the trailer.
4. The structure of claim 3 wherein said baffle is positioned immediately adjacent the rear of the cab roof.

Footnotes

Footnote 1. The district court did not accord that decision collateral estoppel effect because it concluded that Austrian Patent No. 63,329 to Constantin, discussed in the text *infra*, was "never given serious attention as prior art." Cf. *Shelcore, Inc. v. Durham Industries, Inc.*, 745 F.2d 621, 627 n.10, 223 USPQ 584, 588-89 n.10 (Fed. Cir. 1984) (citing *Stevenson v. Sears, Roebuck & Co.*, 713 F.2d 705, 711 n.5, 218 USPQ 969, 974 n.5 (Fed. Cir. 1983)). In this appeal, Rudkin-Wiley has not contested the propriety of the district court's action.

Footnote 2. The four claims of the '876 patent are appended.

Footnote 3. There is some dispute between the parties concerning the appropriate terminology. For purposes of this opinion, "deflector" is used as a generic term encompassing any device used to change the direction of an airflow. "Fairing" is used to describe a deflector which changes the direction of an airflow in a streamlined or continuous manner along the curvature of the fairing. "Baffle" and "shield" are used interchangeably to describe a deflector that abruptly changes the direction of an airflow.

Footnote 4. Lettered paragraphs have been added for convenience of reference.

Footnote 5. The court identified the pertinent publications as follows: a textbook entitled *Fluid Dynamic Drag* published by Hoerner in 1985; a translation of Eiffel's *The Resistance of the Air and Aviation* by Jerome Hunsaker; an article by Hurley entitled "The Use of Boundary Layer Control to Establish Free Stream-line Flows"; *Theory of Flight* by R. Von Mises; and the NACA documents of aero-dynamic experiments from 1920-1960. These articles and textbooks do disclose certain "shielding" principles that can be used to scientifically explain the workings of Saunders' invention. However, there was no showing that any of them contains an example material to the Saunders' invention. The articles and texts merely discuss shielding and streamlining as scientific principles in the theoretical abstract.

Footnote 6. See, for example, footnote 6 of the district court's opinion, stating in pertinent part:

The ▶Uniroyal◀ deflector is a standard height and ▶Uniroyal◀ advises its customers to mount the deflector at the rear of the cab. The slope of the deflector is adjustable, varying with the height of the trailer and the distance between the trailer and the cab. The optimal slope is a function of the ratio between the height differential and the gap distance. Therefore, rather than varying two parameters according to a constant determined ratio, as in the '876 patent, the ▶Uniroyal◀ device varies one parameter according to a variable ratio.

Rudkin-Wiley argues that the effect of the ▶Uniroyal◀ size and placement is to fall within the parameters set forth in its claims. It arrives at its conclusion by noting that trailers have a standard width of 96 inches, giving a half width of 48 inches, and will usually be located between 24 and 60 inches from the back of the cab. Applying its fixed ratios to these distances gives height and location parameters which include the usual placement and height of a ▶Uniroyal◀ deflector.

...

The fact that optimal placement of the '876 baffle may coincide in some instances with optimal placement of the ▶Uniroyal◀ device does not demonstrate that the ▶Uniroyal◀ device infringes upon the '876 formulae.

- End of Case -

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